



New report predicts dire consequences for every U.S. region from global warming

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Sobering report is the most comprehensive to date.

Government officials and scientists released a 196 page report detailing the impact of global warming on the U.S. yesterday. The study, commissioned in 2007 during the Bush Administration, found that every region of the U.S. faces large-scale consequences due to climate change, including higher temperatures, increased droughts, heavier rainfall, more severe weather, water shortages, rising sea levels, ecosystem

stresses, loss of biodiversity, and economic impacts.

Entitled 'Global Climate Change Impact in the United States', the report was crafted by 13 governmental science agencies, several top universities, and research institutions.

Speaking yesterday, President Obama's chief science advisor, John Holdren, described the report as "the most up-to-date, comprehensive and authoritative assessment" of the effects of climate change on the U.S. He said that the report looks at climate change impact regionally, because that is "where people actually experience it: in their back yards."

The report splits the U.S. into nine regions: Southwest, Northwest, Great Plains, Midwest, Southeast, Northeast, Alaska, islands, and coastal regions.

Southwest

In the Southwest, the report finds that water-scarcity will be paramount in the coming decades, describing the possibility of 'conflict' over competing interests for dwindling water sources, due to reductions in spring precipitation and a growing population.



Golf course outside of Las Vegas: the Southwest's water shortages will only worsen according to report. Photo by: Rhett A. Butler.

The report also found evidence for increased droughts, wildfires, and invasive species. Droughts and warmer temperatures are likely to affect agriculture across the region, while already-worsening wildfires will threaten property and forests.

Economically, the region is likely to suffer from depressed tourism, especially in the winter months when many activities, such as skiing, will be affected by depressed precipitation.

Northwest

Like the Southwest, the report finds that the Northwest will face water supply issues,

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due to declining springtime snowmelt.

The rich ecosystems of the Northwest are likely to suffer from wildfires, increased insect outbreaks, and species migrating due to changing temperatures. Trees are expected to experience decreased growth due to drought and higher temperatures. Such changes will inevitably affect the forestry industry.

In addition the report predicts that salmon—already dwindled from historical populations—will suffer declines due loss of habitat from warmer temperatures.

Finally, a rise in seas-levels is expected to increase erosion along the coasts, swallowing beaches and threatening areas in the south Puget Sounds.

Great Plains

The Great Plains region also faces water shortages, due to increased droughts, higher temperatures, and faster evaporation rates.

The region, dependent largely on agriculture, is expected to suffer from increasing insect infestations, less precipitation, and shifting growing zones due to higher temperatures. Crop yields could be significantly affected.

The report also predicts trouble for the regions' ecosystems, which have already been stressed due to changes in land-use. Native birds are likely to experience habitat shifts, while some native species may not survive ecosystem changes when already stressed by habitat loss.

Midwest

The Midwest is also known as the Great Lakes region. However, the report predicts that the Great Lakes are likely to face reduction in water levels, affecting everything from recreation to shipping.

The report finds that the region will experience more precipitation in the winter and spring, but greater evaporation in the summer. This will lead to both increased flooding and periodic water shortages.

The Midwest will have a longer growing season because of higher temperatures (the growing season has already increased by a week), but with this will also come more heat waves, insects, and weeds, in addition to the new pattern of too-much-water and not-enough.

The report predicts that native species will shift their range due to higher temperatures and new pressures from southern species moving north. Unfortunately due to large cities and sprawling agriculture around the Great Lakes, many species may find they have no place to go.

Southeast

Already hot, the Southeast will become even hotter, leading to worsening of heat-related health issues. As with the Midwest, agricultural yields, and livestock production are expected to decline due to higher temperatures. Water shortages already occurring (most notably in Atlanta in 2007) will now be more frequent.

The study also found that the region will have increased hurricane intensity and flooding from more intense storm surges. Low-lying communities are thus threatened; portions of the coast will be lost in the long run for good.



Redwood in Big Sur. Northwest trees are predicted to experience decreased growth due to a warmer U.S. Photo by: Rhett A. Butler.

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In a region dependent in part on tourism and retirees attracted to the 'sunbelt', it is expected that the combination of worsening heat, water shortages, and severe weather will make the region far less attractive, thereby depressing the economy.

Northeast

A region known for its massive cities is likely to experience more heat waves, worsened by the urban heat affect. The study predicted major cities will experience an average of 20-30 days above 100 Fahrenheit every summer, whereas now most of these cities experience just a few days that rise above that marker.

Agricultural production will be forced to change; some well-known crops like apples, blueberries, cranberries, and syrup are likely to become more difficult, if not impossible, to grow. In addition, both lobster and cod fisheries are likely to be adversely affected by the species shifting their ranges.

Coastal flooding due to sea-level rise is expected to occur across the region, threatening some urban areas.

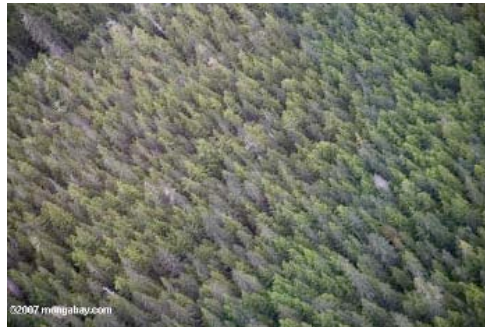
Winter sports, important for the tourism industry, could see their season cut in half.

Alaska

On the front-lines of climate change, Alaska has warmed more than twice as much as any other region in the U.S. While Alaska could benefit from a longer growing season, decreased soil moisture may negate any potential benefits. As well Alaska's white spruce forests are experiencing decline in growth and widespread mortality due to longer summers.

A warmer Alaska also means worsening insect outbreaks, since winter is no longer cold enough to kill-off species like the spruce beetle. In addition, worsening wildfires are expected.

The thawing permafrost is causing land to sink, damaging homes and public infrastructure, costing the state billions of dollars for repair costs. In addition, the thawing permafrost endangers coast lines already threatened by loss of sea ice and rising sea levels.



Temperate rainforest in Tongass National Park: Alaska's iconic wilderness faces more fires and insect infestation. Photo by: Rhett A. Butler.

While polar bears have become the poster-child for global warming, a number of Alaskan species, both marine and terrestrial, could experience shifts in ranges and other stresses due to the large-scale changes in their ecosystems.

Islands

Most pressing for the state of Hawaii and other island territories is the loss of coasts due to worsening storm surges and rising seas levels. The report predicts frequent flooding and the permanent loss of some coastal lands.

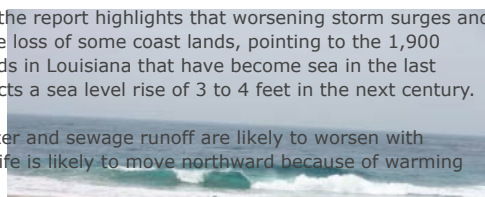
Freshwater, already a difficult-to-come-by commodity for islands, is likely to become even scarcer, since rising sea levels will inundate some freshwater sources with seawater.

Fisheries are expected to see significant declines, since coral reefs are being lost to bleaching caused by warmer temperatures, while ocean acidification is causing the spread of 'dead zones'. Shifting ranges for fish will also impact the industry.

U.S. coastal regions

Goodbye, to some coastlines: the report highlights that worsening storm surges and rising sea levels will lead to the loss of some coast lands, pointing to the 1,900 square miles of coastal wetlands in Louisiana that have become sea in the last century. In all the report predicts a sea level rise of 3 to 4 feet in the next century.

'Dead zones' created by fertilizer and sewage runoff are likely to worsen with warming. In addition, marine life is likely to move northward because of warming waters.



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Coral reefs face multiple stressors, including higher temperatures and ocean acidification. The study predicts that this double whammy will cause coral reef loss throughout U.S. coastal waters.

Conclusion: Finding Hope

"This is the most thorough and up-to-date review ever assembled of climate-change impacts observed to date as well as those anticipated in the future across the United States," says Evan Mills, a scientist at Berkeley who contributed to the report. "The good news is that the harshest impacts of future climate change can be avoided if the nation takes deliberate action soon. This can be done through a balanced mix of activities to reduce greenhouse-gas emissions and adaptation to the otherwise unavoidable impacts."

Environmental groups pointed to the report as evidence that the U.S. needs a strong climate bill now.

"This is the clearest of wake up calls—climate change is here and the time for action is now," said World Wildlife Fund US CEO Carter Roberts. "As Congress debates landmark legislation to solve our energy and climate crisis, this report provides conclusive evidence that our planet is already changing before our very eyes, with enormous implications for our nation's economic future and way of life. Already Americans are paying the price for the lack of action on climate change in the past and those costs will only rise. It's time for Congress to act. "



Along with rising sea levels, islands like Maui also face freshwater shortages. Photo by: Rhett A. Butler.

Jane Lubchenko, head of the National Oceanic and Atmospheric Administration, a lead agency on the report, said that "climate change is happening now." But while the findings in the report are cause for concern, she emphasized that it's not too late to change the predictions.

"Trends are not destiny," she said.

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